

## ASSIGNMENT 5

Textbook Assignment: "Ship Propulsion," chapter 8, pages 8-1 through 8-8, "Pump, Valves, and Piping," chapter 9, pages 9-1 through 9-49, and "Auxiliary Machinery and Equipment," chapter 10, pages 10-1 through 10-54.

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| <p>5-1. The primary function of any marine engineering plant is to convert the chemical energy of a fuel into useful work and use that work for what purpose?</p> <ol style="list-style-type: none"><li>1. Propulsion of the ship</li><li>2. Decontamination of the ship</li><li>3. Operation of hydraulic clutches</li><li>4. Production of steam</li></ol> <p>5-2. What type of propeller is used in most naval ships?</p> <ol style="list-style-type: none"><li>1. Gear</li><li>2. Paddle</li><li>3. Thrust</li><li>4. Screw</li></ol> <p>5-3. Steam propulsion-type ships built since 1935 have what type of propulsion gears?</p> <ol style="list-style-type: none"><li>1. Single reduction</li><li>2. Double reaction</li><li>3. Double reduction</li><li>4. High-speed reaction</li></ol> <p>5-4. Pneumatic clutches with a cylindrical friction surface are used with engines up to what maximum horsepower?</p> <ol style="list-style-type: none"><li>1. 1,000 hp</li><li>2. 2,000 hp</li><li>3. 3,000 hp</li><li>4. 4,000 hp</li></ol> <p>5-5. What are the two general styles of friction clutches?</p> <ol style="list-style-type: none"><li>1. hydraulic and mechanical</li><li>2. Disk and band</li><li>3. Hard and soft</li><li>4. Gear and rod</li></ol> | <p>5-6. What are the two general types of friction clutches?</p> <ol style="list-style-type: none"><li>1. Dry and wet</li><li>2. Hard and soft</li><li>3. Disk and band</li><li>4. Air and hydraulic</li></ol> <p>5-7. A screw propeller may be broadly classified by which of the following terms?</p> <ol style="list-style-type: none"><li>1. Single pitch or double pitch</li><li>2. Stationary angle or variable angle</li><li>3. Fixed pitch or controllable pitch</li><li>4. Stationary pitch or variable rotation</li></ol> <p>5-8. Classification of centrifugal pumps is based on which of the following factors?</p> <ol style="list-style-type: none"><li>1. Self-priming ability</li><li>2. Positive displacement</li><li>3. Number of impellers</li><li>4. Position of moving vanes</li></ol> <p>5-9. The sidewalls of a closed impeller extend from what point to what other point?</p> <ol style="list-style-type: none"><li>1. (a) The eye<br/>(b) outer edge of vane tips</li><li>2. (a) Suction line<br/>(b) wearing rings</li><li>3. (a) Stuffing box<br/>(b) the eye</li><li>4. (a) The water seal<br/>(b) discharge line</li></ol> |
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- 5-10. High-speed impellers must be balanced to avoid vibration. What is the purpose of a close radial clearance between the outer hub and the pump casing?
1. To decrease friction
  2. To decrease axial thrust
  3. To minimize leakage from the suction side
  4. To minimize leakage from the discharge side
- 5-11. What is the function of mechanical seals and stuffing boxes?
1. To improve pump operation
  2. To seal between the shaft and the casing
  3. To clean bilges
  4. To prevent liquid from being pumped
- 5-12. What type of pump is considered to be nonpositive displacement?
1. Sliding vane
  2. Rotary
  3. Centrifugal
  4. Jet
- 5-13. A pump that does not develop enough discharge pressure could have which of the following problems?
1. Clogged impeller passages
  2. A bent shaft
  3. Excessive suction lift
  4. Insufficient pump speed
- 5-14. Which of the following statements about a centrifugal pump is true?
1. It is essentially self-priming
  2. It loses no energy
  3. It is a positive-displacement pump
  4. It requires a relief valve
- 5-15. What type of pump has no moving parts?
1. Screw
  2. Jet
  3. Gear
  4. Sliding vane
- 5-16. What device uses feedback to provide automatic control of speed, pressure, or temperature?
1. Regulating valve
  2. Flange coupling
  3. Proportional-flow filter
  4. Governor
- 5-17. What is the purpose of a valve in a closed system?
1. To sample fluids
  2. To control fluids
  3. To increase fluid pressure
  4. To decrease fluid pressure
- 5-18. Brass and bronze valves are never used in systems that exceed what maximum temperature?
1. 450°F
  2. 550°F
  3. 650°F
  4. 750°F
- 5-19. There are many different types of valves that can be used to control fluid flow. What are the two basic groups of valves?
1. Globe and check
  2. Check and gate
  3. Stop and check
  4. Gate and globe
- 5-20. Due to valve design, gate valves are not used for throttling purposes for which of the following reasons?
1. They make it difficult to control fluid flow and can damage valves
  2. They make it difficult to control fluid flow and are too lightweight
  3. They can damage valves and are too lightweight
  4. They make it difficult to control fluid flow and are excessively expensive

5-21. In how many directions will a check valve allow fluid to flow?

1. One
2. Two
3. Three
4. Four

5-22. What type of valve requires a 90-degree turn to operate the valve in either the completely open or closed position?

1. Check valve
2. Gate valve
3. Ball valve
4. Butterfly valve

5-23. If a constant-pressure pump governor is attached to a gear pump, to which of the following parts is the governor connected?

1. The driving gear
2. The driven gear
3. The suction line
4. The discharge line

5-24. You can close a butterfly valve by using which of the following procedures?

1. Depress a push button
2. Lift up on a handle
3. Turn the handle one-fourth turn
4. Turn the handle one-half turn

5-25. Whether a stop-check valve acts as a stop valve or as a check valve is determined by which of the following factors?

1. The position of the control lever
2. The direction of the flow
3. The type of disk installed
4. The position of the valve stem

5-26. In a piping system, relief valves automatically open when what factor has been exceeded?

1. The temperature
2. The pressure
3. The flow
4. The circulation

5-27. Reducing valves in reduced pressure systems are designed to be used for which of the following purposes?

1. To prevent damage to the lines due to excessive pressure
2. To provide a steady pressure lower than the supply pressure
3. To vary the operating pressure and the supply pressure
4. Each of the above

5-28. Fuel oil suction may be taken from one of many sources and discharged to another unit or units of the same group by what device?

1. Priority valve
2. Globe valve
3. Valve manifold
4. Operating lever

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| A. STEAM         |
| B. SEWAGE        |
| C. POTABLE WATER |
| D. HELIUM/OXYGEN |

**Figure 5A**

IN ANSWERING QUESTIONS 5-29 THROUGH 5-31, REFER TO FIGURE 51 AND SELECT THE FLUID THAT CORRESPONDS TO THE COLOR CODE FOR VALVE HANDWHEELS AND OPERATING LEVERS .

5-29. Gold.

1. A
2. B
3. C
4. D

5-30. Striped buff/green.

1. A
2. B
3. C
4. D

- 5-31. Dark blue.
1. A
  2. B
  3. C
  4. D
- 5-32. What method is used to visually determine whether the seat and the disk of a valve make good contact?
1. Seating-in
  2. Spotting-in
  3. Grinding-in
  4. Lapping
- 5-33. What manual process should you use to remove small valve seat and disk irregularities?
1. Seating-in
  2. Spotting-in
  3. Grinding-in
  4. Lapping
- 5-34. Which of the following devices are designed to drain condensate from steam lines without allowing steam to escape?
1. Steam stops
  2. Condensate drain valves
  3. Filters and strainers
  4. Steam traps
- 5-35. What device has the function of retaining insoluble contaminants by use of some porous medium?
1. A strainer
  2. A filter
  3. A trap
  4. An element
- 5-36. To determine the size of tubing, which of the following measurements is used?
1. The actual inside diameter
  2. The nominal outside diameter
  3. The nominal outside circumference
  4. The nominal inside circumference
- 5-37. Resistance to corrosion and the ability to withstand high pressure and temperature are important factors in choosing a material for a piping system. Which of the following types of tubing should be used?
1. Steel alloy
  2. Copper alloy
  3. Aluminum alloy
  4. Brass alloy
- 5-38. Flexible hose is identified by the manufacturer's part number and the size or dash number. Which of the following is the best description of the dash number?
1. The outside diameter in eighth-inch increments
  2. The inside diameter in sixteenth-inch increments
  3. The outside circumference in eighth-inch increments
  4. The inside circumference in sixteenth-inch increments
- 5-39. Gaskets in flange joints of a pipe are used for what purpose?
1. To allow for misalignment
  2. To allow for expansion
  3. To serve as a spacer
  4. To prevent leakage
- 5-40. Packing material used for sealing is placed in or on which of the following areas?
1. In the stuffing box
  2. On the outside of the stuffing box
  3. In the revolving shaft
  4. On top of the valve stem

- 5-41. Upon completion of visual inspection of a flexible hose assembly, a hydrostatic test is done to ensure what allowable maximum pressure?
1. Rated pressure for 1 hour
  2. Twice the rated pressure for 1 hour
  3. Rated pressure for not less than 1 minute
  4. Twice the rated pressure for not less than 1 minute
- 5-42. Hose assemblies intended for gas or air service must be tested with
1. compressed air at 1 psi
  2. hydrogen at 10 psi
  3. nitrogen at 100 psi
  4. oxygen at 1,000 psi
- 5-43. Fittings are used to connect pipe, tube, or hose to system components. One type of fitting is the bolted flange joint, which is used in systems operating at which of the following pressures?
1. 100 psi
  2. 1,000 psi
  3. 10,000 psi
  4. All pressures now in use
- 5-44. The use of flange safety shields reduces the possibility of which of the following problems?
1. Fuel oil leaks
  2. MER flooding
  3. AMR fuel fires
  4. Lube oil pooling
- 5-45. Many shipboard machinery casualties have resulted from fasteners that were not properly installed. Which of the following reasons can cause fasteners to loosen?
1. Machinery vibration
  2. Thermal expansion
  3. Thermal contraction
  4. Each of the above
- 5-46. When installed and tightened, male threaded fasteners protrude at least one thread length beyond the top of the nut or plastic locking ring. The number of threads should not exceed five and in no case should thread protrusion exceed ten threads. This is the 1 to 10 rule.
1. True
  2. False
- 5-47. Which of the following phrases best describe the refrigeration effect?
- A. Heat will flow from a colder to a warmer object or environment
  - B. Heat will flow from a warmer to a colder object or environment
  - C. An artificial way of lowering the temperature
  - D. A mechanical transformation of the surrounding atmosphere
1. A and D
  2. B and C
  3. A and D
  4. C and D
- 5-48. What is the unit of measurement for the amount of heat removed in a refrigeration system?
1. Btu
  2. SAE
  3. Latent heat
  4. Refrigeration ton
- 5-49. Which of the following is/are the main part(s) of the R-12 system?
1. TXV
  2. Capacity control system
  3. Receiver
  4. All of the above
- 5-50. What device maintains a constant refrigerant condensing pressure?
1. Evaporator
  2. Capacity control system
  3. Water regulating valve
  4. Compressor

5-51. At what temperature will R-12 boil at atmospheric pressure?

1. 12°F
2. 0°F
3. -12°F
4. -21°F

5-52. Which of the following fans is generally preferred for exhaust systems that handle explosive or hot gases?

1. Centrifugal
2. Vane-axial
3. Tube axial

5-53. The vapor compression chilled water circulating system differs from a refrigerant circulating air-conditioning system in what way?

1. Method of evaporation
2. Method of compression
3. Method of condensing

5-54. Air compressors may be classified according to

1. make, model, and oil-free discharge
2. pressure, oil-free discharge, and type of compressing element
3. pressure, model, and oil-free discharge
4. type of compressing element, make, and model

5-55. Which of the following prime movers is directly connected to the vertical, five-stage, reciprocating high-pressure air compressor?

1. Steam turbine
2. Diesel engine
3. Electric motor
4. Pneumatic turbine

5-56. Medium-pressure air compressors have a discharge pressure range between

1. 51 and 100 psi
2. 101 and 150 psi
3. 151 and 1000 psi
4. 1001 and 1200 psi

5-57. Dehydrators are used for which of the following purposes?

1. To compress air
2. To cool compressed air
3. To add moisture to compressed air
4. To remove moisture from compressed air

5-58. Condensed vapor that is produced by a distilling plant is pumped to which of the following locations?

1. The firemain system
2. The condensate system
3. The ship's freshwater tank
4. The overboard discharge tank

5-59. What is the purpose of the three wings on the tubular-type oil purifier?

1. They keep the oil rotating at the speed of the bowl
2. They collect the sediment or other impurities
3. They separate the oil into three layers
4. They help accelerate the rotation of the bowl

5-60. The direction of fluid flow in the electrohydraulic steering gears depends on which of the following factors?

1. Hydraulic ram
2. Tilt box angle
3. Power unit
4. Axial piston

5-61. What component is used for heaving in heavy mooring lines?

1. Winches
2. Windlasses
3. Wild cats
4. Whelps

- 5-62. The gypsy head on an electro-hydraulic winch is connected to the shaft by what means?
1. By adjusting the stroke of its hydraulic pump
  2. By using a clutch
  3. By adjusting the clearance between the friction surfaces of its brake
  4. By regulating the operating voltage of its ac motor
- 5-63. If the hoisting cables should break on one side of an electro-hydraulic elevator, which of the following devices will prevent the elevator from falling?
1. The guide rails
  2. The special control valves
  3. The mechanical locks
  4. The serrated safety shoes
- 5-64. To prevent excessive pressure in the oil feed lines of a lube oil pump system, which of the following types of valves should be used?
1. Governor
  2. Relief
  3. Throttle
  4. Reducing
- 5-65. To get the desired temperature of oil leaving a tube-in-shell type of oil cooler, which of the following cooling actions is regulated?
1. The oil flow
  2. The airflow
  3. The seawater flow
  4. The freshwater flow
- 5-66. Under ideal conditions, what kind of friction, if any, occurs when a main shaft rotates in a properly lubricated main journal bearing?
1. Fluid
  2. Sliding
  3. Rolling
  4. None
- 5-67. Mineral lubricating oils can withstand the effects of high temperature and high speeds better than either animal or vegetable oils.
1. True
  2. False
- 5-68. Main propulsion turbines and reduction gears use which of the following types of oil lubrication?
1. 9110
  2. 3290
  3. 3190 TEP
  4. 2190 TEP